PRELIMINARY FINDINGS OF THE SUBCOMMITTEE ON WATER RIGHTS AND REGULATORY AUTHORITIES

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EXECUTIVE SUMMARY

The objectives of this subcommittee were to analyze Rhode Island water law and regulatory authority for water use decisions, and recommend regulatory structures for future management of water resources. This document presents our findings. At the end of this executive summary is a summary of our principal recommendations.

In this document, we describe the complex network of regulatory authority. Included as appendices are diagrams that illustrate the regulatory authority for water use decisions. Additionally, we constructed a matrix that identifies inconsistencies and inadequate coverage of regulatory authority. This matrix also presents possible solutions. We recommend tighter integration of water quantity and quality decisions, and more coordination among authorities, particularly within drought regions.

In addition to analyzing regulatory authority, we identified the existing legal structures for ground and surface waters. These structures[2] are based on the concept of reasonable use, and we recommend that future withdrawals continue to be subject to the reasonable use standard.

Based on our understanding of the existing regulatory authority and rights structures, and with the aid of the Regulated Riparian Model Water Code (hereinafter Model Code), we then formulate general recommendations. These include acknowledgment that the waters of Rhode Island are owned by the public, with the state acting as trustee.[3] It is recommended, in furtherance of duties as trustee, that the Water Resources Board (WRB), instead of the courts, be the locus of initial decisions concerning water rights.

We identified a number of key considerations as the WRB makes these decisions.[4] One is the link between water quality and water quantity. Also, detailed information on water use and supplies is necessary. Finally, the first priority of water use in these decisions should continue to be for consumption or sanitation necessary for human survival and health.

A new structure of water rights may be necessary to adequately manage water resources, as the state grows and new challenges, including possibly extended droughts, threaten. The group identified and evaluated five different rights structures under a new water allocation program. Three of these would involve programs that would operate only during times of drought. Connected with these drought approaches would be a reporting system. Under this system, strong incentives would be given to report information, including opportunities for funding of voluntary conservation measures, the opportunity to participate in market transactions, and the maintenance of priority under drought regulations.

The first of the drought schema involves **Voluntary Conservation** and protection of water supplies, along with voluntary use reporting. Although this may seem less intrusive, in times of drought that may change: if voluntary measures are insufficient to manage emergency drought conditions, the state would be forced to adopt possibly draconian new emergency measures.

The **Drought Market** system allows the WRB to set a price for water, or could allow individual users to sell or trade their water rights. This allows for more use by those with higher values. However, a market system requires extremely accurate monitoring to ensure the validity of uses and trades. It could also be extremely difficult to determine the initial allocation of rights.

A **Drought Regulatory** system does not generally affect users during times of ample supply; it merely collects data. However, by having predetermined regulations for reductions of use during a drought, such a system significantly increases predictability and avoids harsh emergency measures.

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[2] Reasonable Use Riparian Doctrine for surface water, and American Reasonable Use Doctrine for groundwater.

[3] This is *supported* by a decision of the U.S. Supreme Court, see footnote 13 infra, and *opposed* by the Rhode Island farm community, see footnote 15, infra.

[4] Because there are already some limits on use (use must be "reasonable"), the creation of the WRB to oversee water rights does not constitute a governmental taking. Rather, it merely transfers the initial administrative determination of "reasonable use" from the courts to the Board. This has numerous advantages for users and the State.

There should be stronger political support for measures that would effectively deal with shortages caused by an extended drought.

The first full-time scheme is **Registration**. This involves collection of usage data, but does not include any legislation to regulate use. As with the voluntary system, registration may not address needs for current regulation, and provides no specific guidance in drought situations. Nevertheless, this system would substantially increase information on water use, necessary for proper management of water resources.

Finally, the **Full Permit** system requires all users above a threshold to obtain a specific and non-transferable permit in order to continue use. It addresses both drought times and conflicting uses during non-drought periods. It is expensive to implement and maintain, but provides the greatest control.

In this document, this committee more fully describes these options, and examines the difficult issues connected with each. It should be noted that the extensive analysis of the **Full Permit** system is also useful for implementing the **Drought Regulatory** system.

After more completely understanding these systems, the committee took a vote on whether any one particular approach alone would be appropriate. The result of the vote[5] indicates that a combination approach seems most appropriate.

This combination could consist of a drought component where initial measures might involve heavy encouragement of voluntary conservation, but progressing to more mandatory restrictions as emergency conditions arose. Flexibility of responses should be maintained, with the opportunity for market exchanges that could be reliably enforced. Price mechanisms would also be an important tool for responding to emergency conditions.

Meanwhile, the combination could also include full-time registration of water users above certain levels. Additionally, certain uses, such as out-of-basin transfers, could also be subject to full-time permitting by the WRB.

Summary of Recommendations:

1) Establish WRB as arbiter of “reasonable use”.
2) Establish legislative link between water quality and water quantity; grant power to WRB to consider both in making decisions.
3) Establish legislative link between surface water and groundwater; grant power to WRB to consider both in making decisions.
4) Develop policies that will enable predictable responses during a drought.
5) Collect significantly more data on water use and supplies. This data is critical for the implementation of any policies, rights structures, or determinations of "reasonable use."
6) Develop a new rights structure as a combination of Voluntary, Market, and Regulatory Approaches during droughts, Registration of certain users, and Full-time Permitting of certain uses.

[5] Tally as follows: Voluntary, 2 votes; Market, 1 vote; Drought Regulatory, 2 votes; Registration, 1 vote; Full Permit, 2 votes; 2 members abstained from voting. With no single approach coming close to a majority, a combination of these seems appropriate.

FINDINGS

Regulatory Authority: Analysis and Recommendations

- Regulatory Authority Diagram (See Appendix A-1)
- Matrix of Deficiencies and Possible Solutions (See Appendix A-2)

- Charge a central authority with the burden of proof regarding water availability with respect to the safe yield of the resource.
- Encourage the RI Dept. of Environmental Management to integrate permit programs with applicable water allocation program.
- Identify self-supply users and educate them; clarify/quantify water rights.
- Coordinate water restrictions within drought regions with oversight provided by the Drought Steering Committee.
- Establish and maintain written wholesales agreements between water suppliers; identify where agreements do not exist or are dated and prepare new ones.
- Expand Rhode Island membership in the New England Interstate Water Pollution Control Commission and investigate whether the interstate compact addresses water quantity.
- Quantify tribal water rights.
- Assess potential consolidation of water planning documents (Water Supply Systems Management Plans and Clean Water Infrastructure Plans).
- Revise State Guide Plan (SGP) #723 Water Emergency Response Plan and advise the RI Emergency Management Agency regarding the state Emergency Operations Plan conflict.
- Revise other applicable SGP elements as necessary.
- Record the RI Coastal Resources Management Council's Special Area Management Plans and the RI Dept. of Administration, Statewide Planning Division's State Guide Plan elements in the RI Secretary of State's rules database.

Water Rights: Existing Doctrine

- Surface Water: Reasonable Use Riparian Doctrine[6]
  [*Tyler v. Wilkinson*, 24 F. Cas. 472 (D.R.I. 1827)][7]
- Ground Water: American Rule of Reasonable Use[8]
  [Similar to Absolute Ownership, except that uses that are wasteful and harmful to neighbors, are considered unreasonable, and hence unlawful]
  [Rose v. Socony-Vacuum Corporation, 54 R.I. 411; 173 A. 627 (R.I. 1934); overruled for other reasons *Splendorio v. Bilray Demolition Co.*, 682 A.2d 461 (R.I. 1996)][9] [10]

[6] The reasonable use riparian doctrine says that riparian landowners have a usufructuary right (a right-to-use) to a reasonable use of the water bodies that touch their land. Whether a use is reasonable depends upon a comparison of a number of factors, vis-à-vis other users of the water body. Domestic uses by a riparian landowner are reasonable per se.

[7] The significant text from this case is as follows: "When I speak of this common right [to use water as a riparian landowner], I do not mean to be understood, as holding the doctrine, that there can be no diminution whatsoever, and no obstruction or impediment whatsoever, by a riparian proprietor, in the use of the water as it flows; for that would be to deny any valuable use of it. There may be, and there must be allowed of that, which is common to all, a reasonable use. The true test of the principle and extent of the use is, whether it is to the injury of the other proprietors or not. There may be a diminution in quantity, or a retardation or acceleration of the natural current indispensable for the general and valuable use of the water, perfectly consistent with the existence of the common right. The diminution, retardation, or acceleration, not positively and sensibly injurious by diminishing the value of the common right, is an implied element in the right of using the stream at all." 24 F. Cas. 472, 474.

[8] There is very little common law regarding groundwater in Rhode Island. Most cases arise from contamination of groundwater sources, rather than a conflict over pumping and diversion.

Background to Water Allocation

- Water rights under existing doctrines are limited to reasonable uses.[11] Previously, reasonable uses have been ascertained on a case-by-case basis by courts for states that operate under a riparian rights system. The following alternate structures continue these right structures, except the initial locus of determining whether uses are reasonable will shift to the administrative agency responsible for water allocation, the RI Water Resources Board. Unlike a case-by-case system, an administrative regulatory system provides notice and allows users to predict the results of their actions before acting, and to avoid rather than repair any violations. This approach has clear savings in time, money, and resources.

General Recommendations (May require revision of §46-15, Water Resources Board)

- [From Regulated Riparian Model Water Code, § 1R-1-01] The waters of the State of Rhode Island are a natural resource owned by the State in trust for the public and subject to the State's sovereign power to plan, regulate, and control the withdrawal and use of those waters, under law, in order to protect the public health, safety, and welfare.[12] [13] [14] [15]

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[9] The significant text from this case is as follows: "In England this right to underground waters has been held to be absolute and the motive of the owner in appropriating or diverting the same is immaterial. Mayor of Bradford v. Pickles, (1895) App. Cas. 587. In this country the authorities are in conflict as to the nature of the right in underground waters. Some jurisdictions follow the English rule and others modify the rule to the extent that the owner of land may not through malice or negligence deprive the adjoining owner of percolating waters. To this extent in the latter jurisdictions the right is not absolute but relative. See Chatfield v. Wilson, 28 Vt. 49; Elster v. Springfield, 30 N.E. 274; Phelps v. Nowlen, 72 N.Y. 39; Chesley v. King, 74 Me. 164; Greenleaf v. Francis, 35 Mass. 117, 18 Pick. 117; Wheatley v. Baugh, 25 Pa. 528; Bassett v. Company, 43. N.H. 569; Roath v. Driscoll, 20 Conn. 533. Angell on Watercourses, (6th ed.) 114.
In this State the right to subterranean waters appears to be relative to the extent that they may not be purposely or negligently diverted. In Buffum v. Harris, 5 R.I. 243, it was held on motion for a new trial, after a verdict for the defendant, that the plaintiff received the benefit of all the direction to which he was entitled when the jury were charged: "That if the defendant had purposely or negligently constructed his drains, so as thereby to drain the water off from, or to lessen the quantity of water in the plaintiff's fountain, he would be liable to the plaintiff therefor."" 54 R.I. 411, 418.

[10] See also Hydro-Manufacturing, Inc. v Kayser-roth Corp., 640 A.2d 950 (R.I. 1994).

[11] See discussion of section above on Existing Doctrine: Reasonable Use Riparian and American Reasonable Use.

[12] This statement lays out the general idea that the waters of the state should be managed in a way that promotes the "public interest." Whether a use is in the public interest depends on a balancing of different considerations. These considerations include "promoting economic growth, mitigating the harmful effects of drought, resolving conflicts among competing water users, achieving balance between consumptive and nonconsumptive uses of water, encouraging conservation, preventing excessive degradation of natural environments, and enhancing the productivity of water-related activities" [Model Code, § 1R-1-01].

[13] As U.S. Supreme Court Justice Oliver Wendell Holmes, a champion of property rights, held in *Hudson County Water Co. v. McCarter*, "[F]ew public interests are more obvious, indisputable and independent of particular theory than the interest of the public of a State to maintain rivers that are wholly within it substantially undiminished, except by such drafts upon them as the guardian of the public welfare may permit for the purpose of turning them to a more perfect use. This public interest is omnipresent wherever there is a State, and grows more pressing as population grows. It is fundamental, and we are of the opinion that the private property of riparian proprietors cannot be supposed to have deeper roots. … The private right to appropriate is subject not only to the rights of lower owners but to the initial limitation that it may not substantially diminish one of the great foundations of public welfare and health." 209 U.S. 349, 356 (1908), cited in Joseph Sax, Barton Thompson, Jr., John Leshy, & Robert Abrams, Legal Control of Water Resources, 3rd ed., 539 (2000).

[14] The commentary to this section of the Model Code points out that this is based on the doctrine of public trust: "The reference to the ownership of the waters by the State in trust for the public echoes the idea of the public trust doctrine. National Audubon Soc'y v. Superior Ct., 658 P.2d 709 (Cal.), cert. denied sub nom. City of Los Angeles v. National Audubon Soc'y, 464 U.S. 977 (1983); United Plainsmen Ass'n v. North Dakota State Water Conserv. Comm'n, 247 N.W.2d 457 (N.D. 1976); Douglas Grant, Western Water Rights and the Public Trust Doctrine: Some Realism about the Takings Issue, 27 Ariz. St. L.J. 423 (1995); Joseph Sax, The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention, 68 Mich. L. Rev. 471 (1970)."

[15] The farming community of Rhode Island dissents, stating, "The waters do not belong to the public." Email from Al Bettencourt, Rhode Island Farm Bureau, 11-18-03.

- An accurate inventory of surface and groundwater withdrawals and water supplies is necessary to properly manage the water resources of the State.[16]
- Water withdrawals should continue to be subject to the "reasonable use" standard.[17]
- Water allocation decisions should recognize the interdependencies of water quality and water quantity, and between groundwater and surface waters.[18] [19]
- Water allocation should play an important role in land use and development decisions, both in ensuring sufficient supply of water, and also in assessing the impact of development on water resources.[20]
- The Water Resources Board should review and implement the drought management plan, including clarifying opportunities for agricultural interests to acquire credits through the adoption of agricultural water withdrawal management plans, and specifying a system of priorities for water allocation.[21]

Priorities

- The agricultural sub-group[22] concluded that agriculture "is 'a' priority and usually ranked second next to direct human consumption or sanitation necessary for human survival and health."[23] This is consistent with the Regulated Riparian Model Code, §6R-3-04:[24] [25]
- "When the waters available from a particular water source are insufficient to satisfy all lawful demands upon that water source, water is to be allocated … up to the safe yield or other applicable limit of allocation of the resource according to the following preferences: (a) direct human consumption or sanitation … as necessary for human survival and health; (b) uses necessary for the survival or health of livestock and to preserve crops or physical plant and equipment from physical damage or loss **in so far as it is reasonable to continue such activities in relation to particular water sources**;[26] and

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[16] Proper management requires information. For water resources management, the information needed includes the quantities of available water resources, their locations, and demands on these water resources. With this information, creative solutions to water shortages may be found.

[17] The "reasonable use" standard is the foundation of the reasonable use riparian surface water and American reasonable use groundwater doctrines. Western water rights tend to be based on the "appropriation" standard. However, the conditions in Rhode Island imply that the reasonable use standard is more appropriate.

[18] These interrelationships are very important. For example, poor water quality can mean that water isunavailable for use, while additional water quantities for dilution can improve water quality. Meanwhile, the running of surface waters recharges underlying aquifers through seepage. In the past, water quality and water quantity, and groundwater and surface water have been treated separately. However, due to these interrelationships, joint management of water quality and water quantity, and groundwater and surface water is necessary. Also see Appendix A-3, showing the USGS flow diagram.

[19] Other states have adapted their regulatory systems for water resource management to recognize this interconnection. For instance, California merged the agency responsible for water quality and the agency responsible for water quantity decisions to form the State Water Resources Control Board.

[20] Land use decisions are also interconnected with water allocation. Increased development of an area leads to reduction in the area available for aquifers to be recharged (due to roads and compaction of soil). As a result, increased development reduces the recharge rates of aquifers. Meanwhile, new developments have specific water requirements. As a result, again, joint management of land use and water allocation is necessary.

[21] This statement does not imply that there is any entitlement to water.

[22] This sub-group consisted of Al Bettencourt, Rhode Island Farm Bureau; William Stamp, III, Rhode Island Agricultural Council; and Kenneth Ayars, Chief of DEM's Division of Agriculture and Resource Marketing.

[23] It should be noted that, under R.I. Gen. Laws §46-15.7-1(b)(5), priority to commercial agricultural producers, defined by 46-15.3-4(2), is given only to those that adopted and implemented an agricultural water withdrawal management plan. The legislation is intended to advance conservation of RI waters as a natural resource. 46-15.7-1(a)(1).

[24] Please note: this section of the Regulated Riparian Model Code is inserted as a reference, and not as a specific recommendation.

[25] See also the findings of the Priority Uses Subcommittee.

[26] Emphasis added.

(c) other uses in such a manner as to maximize employment and economic benefits within the overall goal of sustainable development as set forth in the comprehensive water plan."[27]

- Within classes of users, priorities may also be assigned to those users who have provided information about their prior and existing water use, have adopted water conservation practices, or have done a combination of these two.
- Flexibility in working with priorities is valued; however, clarity and certainty in determining rights based on priorities is also important.

Recommendation of Appropriate Structure

- Surface Water
  - Alternative 1: Management of Drought Situations[28]
    - During regular years, no changes would occur, although water users would be encouraged to report information concerning their use. If drought conditions exceed set triggers, additional restrictions will be implemented. More restriction will occur in times of greater drought.[29]

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[27] This section prioritizes use. Because low priority users may be denied some water during a drought, it is imperative that the prioritizing system reflect the public good.

In the interests of conservation, it may be worthwhile to allow users to "move up" the list within a priority by implementing documented water conservation measures: users who proactively save and manage water should be given priority over equivalent users who do not. A farmer who installs a high efficiency drip system watering his acres of land should gain a 'surety' that his water will remain available long after flood irrigation has stopped. Likewise, a business which proactively installs water-saving appliances and reduces their water use by half should gain priority over one which does not do so. In order to have the most water available, it must be conserved, preferably voluntarily. In order to drive conservation, incentives are required. Priority is a direct and simple way to provide those incentives. Additional incentives to reduce use also exist with a market or barter system: if a high-volume user can net more income by using less water, he will do so.

Note that the Code suggests the following priorities, in order: 1) Human habitation and use, 2) agriculture, and 3) industry. This may or may not be suitable for Rhode Island.

1) Human survival, of course, comes first. Whether that should include watering lawns (a surprisingly large draw on water use, especially during dry times) is a matter of debate.

2) Rhode Island has a large tourism industry which might possibly outweigh agriculture in terms of employment and contribution to the economy. It might not make sense (for example) to save $50,000 worth of tomatoes, while causing $400,000 in lost business due to fish kills and closed recreational facilities.

3) Rhode Island has many hospitals which should perhaps be granted greater priority than general "industry".

4) In terms of {[(economic value) *(people affected)] / [gallons used]}, agriculture is probably below residential use, tourism, and possibly some industry. However, the beauty and tradition of Rhode Island's farms support their protection: they should not be sacrificed merely because they are high-level water users.

[28] A major question is whether the preferred alternative should have a limited scope, such as focusing only on drought situations, or whether it should be comprehensive, such as a full permit system. In comparing these alternatives, a full permit system will involve higher institutional costs. [For more on institutional costs, see Dale B. Thompson, "Beyond Benefit-Cost Analysis: Institutional Transaction Costs and Regulation of Water Quality," Natural Resources Journal, Vol.39, #3, pp. 517-541 (October 1999).] For instance, enforcement of a full permit system will be more costly because it will need to be in place at all times, whereas under the drought system, enforcement is focused on drought situations. Initial implementation costs, i.e. the costs incurred by the administrative agency in setting up these systems, may be somewhat similar. This is because the decisions necessary to implement both systems may be somewhat similar. On the other hand, enactment costs, i.e. the costs of obtaining the political support to institute a system, should be considerably less under a drought system. This is because it will be significantly easier to develop a political consensus to support increased management of water use during drought emergencies.

In order to compare the systems, we would also need to consider the additional benefits that might arise from increased management during non-drought situations. While some benefits can arise, it is likely that because Rhode Island does seem to have mostly adequate water supplies during non-drought situations, the benefits of a full-permit system would not be substantially greater than the benefits under a drought system. Consequently, it seems likely that, from an efficiency standpoint, compared with a full-permit system, a drought system would involve much lower costs without a significant decrease in benefits. In doing so, a drought system would focus attention on the clear need to develop an approach to deal with extended droughts that may have severe consequences on the economy of the state and the welfare of its citizens.

[29] The choice of triggers can have a distinct effect. A Water Shortage might be triggered by current levels of reservoirs or streams, irrespective of use: "If Reservoir A falls below 50 million gallons, it constitutes a Water Shortage". This is both

- Particular sections of the Model Code should be considered in implementing this alternative: § 7R-3-02 Declaration of a Water Shortage; § 7R-3-03 Declaration of a Water Emergency; and § 7R-3-06 Conservation Credits. [See Alternative 2 below for more on these.]

- Alternative 1a: Voluntary Approach[30] [31]
  - This approach is entirely voluntary, involving education and encouragement to use water-saving practices in domestic, industry and voluntary settings. The voluntary system would endeavor to:
    - Educate the public through workshops, newsletters, various publications, public access TV, public radio and other methods as to the potential of water shortages in the future if proper conservation methods are not used today.
    - Collect data from farmers and businesses (on a volunteer basis) and improve methods of estimating water use.
    - Establish minimum stream flows as a desired goal

- Alternative 1b: Market Approach[32] [33] [34]
  - This approach could involve a combination of banking (intertemporal trades) and temporary transfers of water allocations. It could also involve using prices to allocate water.[35]

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certain and predictable, as it is simple to monitor the level of a reservoir or stream on a regular basis. Alternatively, the triggers can take into account both levels and current use: "If Reservoir A holds less water than has been used in the previous two weeks, it constitutes a Water Shortage." This provides more flexibility, as it acknowledges that higher or lower usage will affect when a Water Shortage actually occurs. However, this approach carries more risk, as a period of low use followed by heavy use can exacerbate a water shortage before the restrictions come into effect.

[30] Under the voluntary approach, an individual user would bear most or all of the costs of conservation (perhaps with some cost sharing program with the State), while the benefit would be split among all users. Compare this to the conservation benefits under the Regulated Riparian system, described in § 7R-3-06.

[31] A voluntary approach would seem to be the least intrusive alternative. However, this approach brings with it the risks that voluntary reductions will be insufficient to deal with a drought emergency. In such a situation, a resort to emergency regulations could be a consequence of following this approach. Because these regulations would be developed under emergency conditions, they could involve much more intrusive management of water use than an approach that dealt with a drought emergency at its onset, rather than at its peak.

[32] Markets function well when there is heterogeneity in users and approaches. When some users are more efficient in their operations than other users doing the same type of operations, then a one-size-fits-all approach, such as one used with across-the-board regulations, will be inefficient. Similarly, when a particular problem can be addressed through a number of different approaches, the applicability of these approaches may depend on site-specific and context-specific factors and information. Consequently, a regulation requiring the use of only one approach will therefore involve inefficiencies. In contrast, market mechanisms allow the shifting of responses among more efficient users, and site-specific and context-specific selection of approaches to problems. As a result, market mechanisms can lead to significant cost savings when there are large differences among users and among the applicability of approaches.

[33] One thing that must be emphasized is that with a market approach, tight enforcement of permits is an absolute requirement. Under a market approach, the trading currency is credits that are gained when actual (or expected) water use is less than the amount allowed under the initial permit. Close enforcement is required to ensure that these credits represent the quantity of reduced water use. Without this enforcement, a user could claim a credit in far excess of the amount of water actually conserved.

Furthermore, enforcement is also required to ensure that other users have an incentive to purchase credits. Without close enforcement, a user whose use exceeds the levels specified in their permits will be able to use the excess water without anyone knowing about this excess. As a result, the excess user will have no need to purchase credits. Thus, to ensure proper operation of a market mechanism, tight enforcement is required.

[34] Another important requirement for a successful market system is the establishment of baselines. Sometimes, standards determined under a command-and-control system can aid in the development of baselines. See Dale B. Thompson, "Political Obstacles to the Implementation of Emissions Markets: Lessons from RECLAIM," Natural Resources Journal , Vol. 40, #3, pp. 645-697 (October 2000), for an account of how the existence of adopted regulations enabled the formation of one emissions market, but the lack of regulations in another instance presented a barrier to the formation of another market.

- Under the banking/transfer approach, credits for allocations during drought periods could be obtained by reducing allocations in other periods in exchange for allocations during drought periods[36], or by trading with current users who have surplus allocations they are willing to sell.[37]
- This approach would require sufficient information reporting by current users to enable the calculation of baselines for establishing the quantity of credits.[38]
- Under the pricing approach, a price for surface water would be charged. As drought conditions worsened, prices would rise.[39] The revenues collected would then be distributed, less a charge for administration of this program, to documented rights owners.[40]
- Again, this approach would require sufficient information reporting by current users to enable the calculation of the portion of rebated revenues.

o Alternative 1c: Regulatory Approach[41]
- Initial phase would be entirely voluntary, involving education and encouragement to use water-saving practices in domestic, industry, and agriculture settings.
- If drought conditions worsen, as evidenced by exceeding specific triggers, additional mandatory restrictions will be put into place. Priority criteria will be applied to determine these restrictions.
- Furthermore, in order to determine priority, the WRB needs sufficient information to understand the impact of a particular user on water allocation supplies and demands. This information should be provided by the users themselves. For the users' own benefit, this information is best provided *before* a drought.

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[35] Banking may involve actual storage, which generally requires some additional construction for storage of water. Reservoirs are the most widely used, though some settings may facilitate reverse pumping of water *into* aquifers for later use. Alternatively, banking can refer to saving 'credits' on record for later use.

[36] If you consider the year as having periods of high and low flow, it is most sensible to restrict temporal transfers or banking to within-period exchanges, or else to use some sort of equivalency factor in making exchanges. It may not be as effective to allow reduction of flow in November to compensate for increased flow in July.

[37] Trading or sales can be handled either directly between users, or through a central agency. Using an agency allows tracking of usage changes and ensures accurate trades: users 'sell' or 'buy' rights to or from the agency rather than with each other. It is often considered preferable to avoid a system which leads to, or allows, profit speculation in water rights, and if a central agency sets prices or trade equivalencies, it can avoid the price fluctuations of a completely open market.

[38] Some risks of a market credit system are that a) users will 'claim' more credits than they actually use or are entitled to, and b) users will sell or trade rights, but not actually reduce use as promised. Clearly, the WRB needs to know exact usage to determine how much water an individual is originally allowed, how much 'credit' he is able to store by reducing consumption or trading, and that he actually reduces his use. With some limited exceptions, users who do not have metering installed would have difficulty trading, because they would be unable to prove reduced use. Thus, the benefits of trading may further increase voluntary metering and usage reporting.

[39] The market pricing system has some distinct advantages: 1) It easily allows for temporary or limited fluctuations in use. If someone needs more water temporarily, then he may simply buy it—without going through any additional permitting process. Likewise, unexpected 'extra' water will rarely be wasted because it has value if unused. 2) It encourages conservation: even when water is plentiful, less water use translates directly and predictably into money in users' pockets. Costs of conserving water can be evaluated against money saved when making choices. 3) It encourages economically efficient use, but does not require the state to make 'value judgments' as to which uses are more beneficial: user who require continuation of specific use may continue even in a drought, so long as they are willing to pay.

[40] Some users may try to claim more use than actually occurs during the initial registration period. Care should be taken to avoid or restrict such behavior.

[41] While this approach focuses on drought emergencies, additional guidance for developing this approach can be obtained from the sections of the Regulated Riparian Model Code discussed under Alternative 2: Full Permit System.

[44] At its onset, this system would primarily be for the purpose of collecting information about individual users' use of water.

- Alternative 2: Registration System[44]
  - Under this system, users of both surface and groundwaters above a threshold level would be required to register their water use. The registration system would be used to collect information needed to build the inventory of water uses in Rhode Island. It might be later combined with a Drought Management System. It could also lead into a Full Permit System.
- Alternative 3: Full Permit System[45]
  - Under this system, a permit would be required for withdrawing water from either groundwater or surface water resources. Exceptions to the permit requirement could be available for withdrawals below a specified quantity.[46]
  - Development of this permit system might take guidance from the Regulated Riparian Model Water Code (hereinafter Model Code). The following points highlight specific sections of the Model Code that might be useful in this process.
  - § 2R-2-14 of the Model Code defines a permit: A written authorization issued by the State Agency to a person entitling that person to hold and exercise a water right involving the withdrawal of a specific quantity of water at a specific time and place for a specific reasonable use as described in the written authorization.
  - § 4R-1-08 Water Use Fees: One role of the water use fee is to introduce an incentive to reduce water use while still keeping the decision as to how much water should be used in the hands of the individual user. Questions arise as to how much this fee should be, and what should be done with the revenue raised.
  - The permitting process is described in §6R-1-01 of the Model Code: <u>All</u> withdrawals from the waters of the State are unlawful unless made pursuant to a permit—however, the WRB can specify exemptions to this requirement.
  - § 6R-1-02 sets the levels for exemption. Users whose withdrawals do not exceed these amounts are not required to obtain a permit.
  - § 6R-1-03 Existing Withdrawals: Current users must also obtain a permit—but will generally be assured of obtaining one initially. This gives current users preference over new users in evaluating the initial group of permits.
  - § 6R-1-05: Temporary Permits. The Code provides for the issuance of temporary permits while an application is pending, or during an emergency.
  - § 6R-1-06 Registration of Withdrawals Not Subject to Permits. The Code allows the State to require accurate information reporting on water use. This requirement may extend to exempt users (permitted users, of course, will have already reported water use in their application).
  - § 6R-2-01 Contents of an Application for a Permit. The WRB may in essence demand any information it wants; the user must provide it at his own expense. The Code suggests various minimum information that will always be required.
  - § 6R-2-02: Notice and Opportunity to be Heard. The Code provides for a notice process before granting a permit: 1) written notice by return-receipt mail to state agencies with regulatory authority over the withdrawal, other users who are likely to be affected, and adjacent property owners; and 2) newspaper publication as appropriate to inform the local public.

[45] As noted above, the costs of this approach alternative may be significantly higher than a drought management system, while the benefits of this approach in normal times may be limited by the general adequacy of water supplies during normal periods.

[46] Some states have found difficulty with excluding small users, since their total effect can be very large. For example, a city of houses, each of which consumes 500 gpd year-round, can easily exceed the total use of multiple large farms. In other states, some high volume users dig multiple smaller (and thus exempt) wells in an effort to avoid regulation. Conversely, some states have extremely high levels before permits are required. The perfect solution has yet to be discovered.

- § 6R-2-04 Contesting an Application. Users who are likely to be adversely affected may request a hearing within 30 days of receiving notice; § 6R-2-05 allows all other users to file a written statement within 45 days.
- 6R-2-06: Obligation of the WRB to Act: This important section has three main provisions: 1) the WRB must rule on all applications in 6 months or less; 2) A failure to evaluate the application is deemed as approval; and 3) any applicant whose petition has not been considered may bring an appropriate court action to declare the terms and conditions of the permit as valid.
- § 6R-3-01 Standards for a Permit: The WRB will consider, for instance, whether the proposed use is reasonable, the effect on the safe yield, general plans and strategies, and conservation plans.
- § 6R-3-02 Determining Whether a Use Is Reasonable: Considerations include the number of persons using a water source, the supply potential of the water source, the economic and social importance of the proposed water use, the probable severity and duration of any injury caused to other lawful uses of water by the proposed withdrawal, the probable effects of the proposed withdrawal and use on the public interest in the waters of the State, including, but not limited to: (1) general environmental, ecological, and aesthetic effects; (2) sustainable development; (3) domestic and municipal uses; (4) recharge areas for underground water; (5) waste assimilation capacity; (6) other aspects of water quality; and (7) wetlands and flood plains.
- § 7R-1-01 Permit Terms and Conditions: Essential terms of a new, renewed, or modified permit include: type of use; place, quantity, and time of withdrawal; duration (both of withdrawal and of the permit generally); expiration; duties of the permit holder (such as restoration of water sources, or provision of return flow); and metering, surveillance, and reporting requirements.
- § 7R-1-02 Duration of Permits: The duration of the permits may be limited to a period of time representing the economic life of any necessary investments. Right holders may apply for a renewal of the permit, however at this point, the WRB may consider changed circumstances.

Part 3: Restrictions during Water Shortages or Water Emergencies: One of the central purposes of a regulated riparian system of water law is to enable a State to cope reasonably and effectively with the recurring shortfalls in water supply that are becoming more frequent in the humid parts of the nation. The dominant mode by which water is managed during periods of water crisis under a regulated riparian system is the pairing of a comprehensive information gathering system with legal authority in the state to restrict uses during periods of shortfalls of water supply notwithstanding the permits authorizing greater use during periods of normal supply. This Part provides authority to the State Agency to respond to such shortfalls and to compel water users to comply with the Agency's strategies and decisions.

- § 7R-3-01 Authority to Restrict Permit Exercise: During a shortage or emergency, the WRB may restrict the terms or conditions of permits. In doing so, the WRB should impose restrictions according to previously developed drought management strategies unless they are inappropriate.
- § 7R-3-02 Declaration of a Water Shortage: The WRB shall declare a water shortage whenever it finds the preset conditions exist. Before restricting the exercise of any right conferred by a permit under this Code because of a water shortage, the State Agency shall serve notice of the proposed action on and

provide an opportunity for a contested hearing to any person affected by the proposed restriction.

- § 7R-3-03 Declaration of a Water Emergency
  - The WRB can declare a water emergency when preset conditions exist.
  - The WRB may then order a person who holds a permit under this Code immediately to cease or otherwise change the withdrawal or use of water as necessary to alleviate the emergency.
  - Any person affected by a restriction under this section may obtain a hearing to challenge the restriction.
- § 7R-3-04 Delineation of the Area Affected: The WRB, in declaring a water shortage or a water emergency, shall determine and clearly delineate the area of the State and the water sources included within the shortage or emergency.
- § 7R-3-06 Conservation Credits[47]
  - (1) If practicable, the WRB, in ordering restrictions on the withdrawal or use of water during a water shortage or water emergency, shall not order a person to do more if that person has successfully implemented conservation measures pursuant to the plan of conservation made a term or condition of their permit, until other permit holders shall have achieved comparable restrictions in the exercise of their water rights.
  - (2) When a person holding a water right voluntarily undertakes conservation measures during a period of water shortage or water emergency beyond those required by this Code, including the terms or conditions of the person's permit, that result in significant quantifiable reductions, that person is entitled to a credit for such reductions.

- Alternative 4: Combinations of these systems
  - The ultimate allocation plan could involve combinations of these systems. For instance, very large water users could be under a permitting system, whereas users below the criteria level could be under a drought management system.

Groundwater Recommendations

- Groundwater should be managed in a manner consistent with the management of surface waters.
- Additional information about the use of groundwater and availability of groundwater for specific aquifers is necessary.[49]
- Triggers for more close management of groundwater withdrawals could involve measurements of groundwater use to availability of groundwater in particular aquifers, or measurements of stream flow in designated streams that feed specific aquifers.

[47] This is an effective way to encourage conservation. If you conserve water, you will gain priority in times of water shortage over those who do not. Thus monies spent on conservation provide a financial and equitable benefit.

[49] Certain types of aquifers are vulnerable to the effects of over-pumping, which can include salt water intrusion, large drops in water level, etc. Other aquifers may be limited in size to a distinct geographic area. Just as a surface water management system takes into account seasonal variations of flow, distinct uses, watershed protection, and many other factors, a groundwater management system should take the aquifer characteristics into consideration. This is more crucial in areas with heavy groundwater use.

APPENDIX

A-1: Regulatory Authority Diagrams
A-2: Matrix of Deficiencies and Possible Solutions
A-3: USGS Flow Diagram

APPENDIX A-2

UNDERSTANDING DEFICIENCIES IN WATER RIGHTS LAW, REGULATIONS AND POLICY
Water Rights/Regulatory Authority Committee
August 5, 2003

Existing Gaps or Redundancies	Potential Conflicts	Potential Solutions
No water quantity evaluation of withdrawals		
No stream flow standards		
No regulation of private withdrawals		
Various degrees of water supplier regulation		
Lack of interstate agreements		
Lack of written agreements between suppliers		
No tribal compacts		
Little integration of water and wastewater		
Redundancy: WHP, WSSMP, Infrastruc. plans		
Emergency management coordination		
	Agriculture	
	State/tribes	
	State/local ordinances (zoning) and codes	
	Drought management	
	Out-of-basin transfer	
	Priority uses	
	Plans versus regulations	